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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,687	02/23/2004	Richard Powell Draves JR.	M1103.70161US00	1946

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EXAMINER	
NGUYEN, BRIAN D	

ART UNIT	PAPER NUMBER
2616	

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09/28/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/784,687	DRAVES ET AL.	
	Examiner	Art Unit	
	Brian D. Nguyen	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 August 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) *9-26,31 and 36* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,27-30 and 37-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/3/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 7, 8, and 27-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Haas et al (2004/0025018).

Regarding claims 1, Haas discloses a system for source routing in an ad hoc network, the system comprising: a route discovery mechanism that propagates link quality information (see paragraphs 0017, 0042, 0108, and 0123); a route maintenance mechanism that detects a transmission failure and determines whether a link quality metric for a link should be penalized (see paragraphs 0091 and 0092); a link quality metric maintenance mechanism (see paragraphs 0015 and 0115); and a mechanism for calculating routes based on link quality metrics (see paragraphs 0037 and 0123).

Regarding claim 7, Haas discloses the system resides in a data link layer of a network protocol stack (see paragraph 0049).

Regarding claim 8, Haas discloses the system resides in a network layer of a network protocol stack (see paragraph 0025).

Regarding claim 27, Haas discloses in a multi-hop ad hoc network, a route maintenance method for a source routing protocol the method comprising: determining, by a forwarding node

sending a packet to a neighboring node over a next link in a source route for the packet, whether the link fails to carry the packet; and if the link fails to carry the packet (see paragraph 0091 and 0092), penalizing a link quality metric associated with the next link (see paragraph 0097).

Regarding claim 28, Haas discloses sending a route error message carrying the penalized link quality metric to a source of the packet (see paragraph 0092).

Regarding claim 29, Haas discloses the penalizing the link quality metric comprises increasing a value for the link quality metric by a percentage (the increasing in value for the link quality metric by a percentage corresponding to the decreasing of the rating of the route which means that that link is less likely to be used for routing).

Regarding claim 30, Haas discloses the determining whether the link fails to carry the packet comprises detecting that an explicit acknowledgement message has not been received from the neighboring node within a time interval (see, for example, paragraph 0123).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2 and 37-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haas et al in view of Haas (6,304,556).

Regarding claim 2, Haas et al does not specifically disclose the link quality metric maintenance mechanism comprises: a reactive metric maintenance mechanism that maintains

metrics for links that a node is actively using to route packets; and a proactive metric maintenance mechanism that maintains metrics of all links. However, Haas discloses a system that uses both a reactive and a proactive maintenance mechanism (see col. 4, lines 47-56). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use both reactive and proactive mechanism as taught by Haas in the system of Haas et al in order to overcome the drawbacks of each of the maintenance mechanisms.

Regarding claims 37, 40, Haas et al discloses in a multi-hop ad hoc network, a method for maintaining link quality metrics in accordance with a source routing protocol (see paragraphs 0017, 0042, 0108, and 0123). Haas does not specifically disclose reactively maintaining link quality metrics for a source route of a packet; and proactively maintaining link quality metrics for all links. However, Haas discloses a system that uses both a reactive and a proactive maintenance mechanism (see col. 4, lines 47-56). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use both reactive and proactive mechanism as taught by Haas in the system of Haas et al in order to overcome the drawbacks of each of the maintenance mechanisms.

Regarding claim 38, Haas discloses the reactively maintaining link quality metrics comprises: by a forwarding node, updating the source route with a current link quality metric for a next link in the source route; and by a destination node, sending a gratuitous route reply message to a source node of the packet, wherein the gratuitous route reply contains link quality metrics for the source route (see paragraphs 0070, 0106, 0108, and 0114).

Regarding claim 39, Haas et al in view of Haas does not specifically disclose delaying the sending for a time interval while the destination node waits for an opportunity to piggyback the gratuitous route reply; and while delaying the sending, updating the link quality metrics for the source route when an additional packet arrives from the source node. However, to delay the sending of data for a time interval is obvious because the sending node must wait for an opportunity, permission, or time to send the data; otherwise a collision will occurs. While delaying the sending, updating the link quality metrics for the source route when an additional packet arrives from the source node is obvious because the sending and the updating are two separate processes. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to delay the sending and updating while delaying the sending in order to minimize, for example, packet collision and maximize system performance.

Regarding claim 41, Haas et al discloses the broadcasting the link information message comprises piggybacking the link information message on a route request (see paragraphs 0020 and 0021).

5. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haas et al in view of Saijonmaa (2004/0190468).

Regarding claims 3-5, Haas does not specifically disclose the virtual protocol interlayer comprises layer 2.5 of a network protocol stack. However, Saijonmaa teaches the layer 2.5 is for ad hoc communications (see paragraph 0042). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use layer 2.5 as taught by Saijonmaa in the system of Haas in order to meet the design criteria of a particular implementation.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haas et al in view of Vaid (20020091843).

Regarding claim 6, Haas does not disclose demultiplexing a plurality of physical network adapters. However, Vaid discloses the multiple streams may be demultiplexed into a single data stream (see paragraph 0064). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to demultiplex data streams as taught by Vaid in the system of Haas in order to separate a stream of data from a multiplexed stream of data.

7. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haas et al in view of Haas as applied to claim 40 above, and further in view of Engel et al (2005/0097212).

Regarding claim 42, Haas et al in view of Haas does not specifically disclose generating a dummy route request to carry the link information message. However, to use an actual or a dummy signal to carry information is well known in the art. Engel discloses that link information can be carried in a dummy signal (see paragraph 0027). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the dummy signal as taught by Angel in the system of Haas et al in order to send the link information to other nodes in the network.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Huang (2004/0264372) and Naghian (2006/0007863) both disclose a route discovery mechanism that propagates link quality information such as round trip time delay (RTT).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian D. Nguyen whose telephone number is (571) 272-3084. The examiner can normally be reached on 7:30-6:00 Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Firmin Backer can be reached on (571) 272-6703. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

9/24/07

BRIAN NGUYEN
PRIMARY EXAMINER